

**REMARKS/ARGUMENTS**

Claims 1-10, 12-23, and 25-26. Applicant, by this paper, amends claims 1, 20, 21, and 25-26 and cancels claims 11 and 24 without prejudice. Applicant respectfully requests reconsideration and allowance of all pending claims.

**Discussion of Rejections Under 35 U.S.C. §112**

Claims 1 and 25 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the Examiner states that it is unclear what the “filter circuit” is comprised of based on line 4 of claim 1.

Applicant amends claims 1 and 25 to feature “a filter circuit based on an interconnection of the plurality of elements.” The amended portion of claims 1 and 25 is believed to make definite the term “filter circuit.”

Applicant respectfully requests reconsideration and withdrawal of the rejections based on 35 U.S.C. §112, second paragraph.

**Discussion of Rejections Under 35 U.S.C. §102**

Claims 1-2, 5-10, 12, and 20-21 were rejected under 35 U.S.C. §102(b) as allegedly anticipated by GB 2,081,543 to Cox (hereinafter Cox).

In order for a claim to be anticipated, a single prior art reference must describe, either expressly or inherently, each and every element as set forth in the claim.

Applicant amends claims 1, 20, and 21 to include features that the Examiner concedes are not found in Cox.

**Claim 1** includes the feature that the “switch control module configured to generate a pseudo random switch control signal.” The Examiner concedes, in the Office Action dated February 15, 2007, that Cox fails to teach or suggest a pseudo random switch control signal. *See, e.g., Office Action*, at page 9.

**Claim 20** includes the feature “a delta sigma modulator configured to generate a pseudo random output as the control signal.”

**Claim 21** includes the feature “selectively switching between the first switch configuration and the second switch configuration based on a pseudo random switching signal.”

Each of claims 20 and 21 includes a pseudo random control signal. Claim 20 recites a pseudo random output from a delta sigma modulator as the control signal and claim 21 recites switching based on a pseudo random switching signal.

Cox fails to anticipate claims 1, 20, and 21 at least for the reason that Cox fails to describe a pseudo random control signal.

**Claims 2, 5-10, and 12** depend, either directly or indirectly, from claim 1 and are believed to be allowable over Cox at least for the reason that they depend from an allowable base claim.

Applicant respectfully requests reconsideration, withdrawal of the rejections under 35 U.S.C. §102(b), and allowance of claims 1-2, 5-10, 12, and 20-21.

#### **Discussion of Rejections Under 35 U.S.C. §103**

Claims 3-4 and 25 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Cox in view of U.S. Patent No. 6,975,846 to Chang et al. (hereinafter Chang). Claim 26 was rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Cox in view of Chang and further in view of U.S. Patent Application Publication No. 2004/0196934 to Petrov et al. (hereinafter Petrov).

Claims 11, 13-14 and 24 were rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Cox in view of U.S. Patent No. 5,403,262 to Gooch (hereinafter Gooch). Claim 15 was rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Cox and Gooch and further in view of U.S. Patent Application Publication No. 2004/0,0228,416 to Anderson (hereinafter Anderson). Claims 16-17 were rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Cox, Gooch, Anderson and further in view of U.S. Patent No. 5,181,033 to Yassa et al. (hereinafter Yassa).

Claims 18 and 19 were rejected under 35 U.S. C. 103(a) as allegedly unpatentable over U.S. Patent No. 6,329,939 to Swaminathan et al. (hereinafter Swaminathan) in view of Cox in view of admitted prior art and further in view of Gooch. Claims 22-23 are rejected under 35

U.S.C. 103(a) as allegedly unpatentable over Cox in view of U.S. Patent Application Publication No. 2003/0,224,752 to Rawlins et al (hereinafter Rawlins).

To establish a *prima facie* case of obviousness, the prior art reference, or references when combined, must teach or suggest all of the claim limitations. There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Additionally, there must be reasonable expectation of success in the proposed combination or modification.

**Claim 13** recites a reconfigurable filter. The filter includes “a switch control module configured to generate at least one switch control signal comprising a pseudo random sequence to control the position of the at least one switch.” At least this claimed feature is not taught by Cox or Gooch, whether alone or in combination.

The Examiner concedes that “Cox does not disclose a pseudo random switch control signal.” *Office Action*, at page 9. The Examiner argues that Gooch discloses a switch control module that comprises a pseudo random switch control signal. The Examiner cites to Gooch, at Col. 5, ll. 3-23 for support. However, Gooch describes a random noise signal as a tinnitus masking signal that is filtered to a desired frequency and does not describe a pseudo random switch control signal.

Gooch describes a Minimum Energy Tinnitus Masker. *Gooch*, Title and Abstract. Tinnitus is a perceived ringing, buzzing, whistling, or roaring sound that is experienced by a tinnitus sufferer, but that does not exist as a physical sound. *See, id.*, at Col. 1, ll. 10-12. Tinnitus can be treated by generating a masking sound that interferes with the tinnitus. *See, id.*, at ll. 19-26.

In the embodiment of Figure 7, Gooch describes a tinnitus masking generator that produces a desired masking signal by filtering a broadband random noise signal. The embodiment of Gooch, Figure 7, illustrates three distinct filtering paths, and a signal unfiltered path by which the random noise signal may be filtered. The center frequency of the filters in the filter bank 56 are controlled using a clock signal from a clock circuit 54 (also labeled “frequency control”).

The user can select a center frequency of each of the filters using a Center Frequency (CF) control potentiometer 52 connected to the clock circuit 54. *See, id.*, at Col. 5, ll. 7-14. Each of the filters 60, 62, and 64 in the filter bank 56 filters the random noise signal from the random noise generator 58 to produce a filtered masking signal of a different bandwidth. *See, id.*, at ll. 37-41. The random noise generator 58 also provides a broadband unfiltered noise signal. *See, id.*, at ll. 43-45. A user can select one of the filtered noise signal or unfiltered broadband noise signal as a tinnitus masking signal. *See, id.*, at ll. 46-60.

In contrast to what is argued by the Examiner, the random noise generator 58 in Gooch does not operate as a control signal and does not operate to control switches in the filter bank 56. Instead, the random noise generator 58 in Gooch produces the signal that is filtered by the filter bank 56. The description of a broadband noise signal that is filtered at user controlled frequencies to one of a predetermined number of bandwidths does not teach or suggest "a switch control module configured to generate at least one switch control signal comprising a pseudo random sequence to control the position of the at least one switch," as claimed.

Indeed, there is nothing in Gooch to suggest that the signal from the random noise generator could even be used as a control signal or that it would be desirable to use the random noise signal as a filter control signal, much less a filter control signal to control a switch in a reconfigurable filter.

The Examiner states that it would be obvious to use the random noise signal as the switch control signal "in order to maintain a constant energy throughout all frequencies of the frequency spectrum of the generated signals as suggested by Gooch." *Office Action*, at page 9. However, Gooch does not describe a constant energy across a frequency spectrum as a desirable feature of a control signal.

Instead, Gooch describes a random noise signal having a constant energy throughout the frequency spectrum because this simplifies the construction of the tinnitus mask. With a constant energy random noise signal, the frequency spectrum of the desired tinnitus mask is determined based on the filter response, and not the variation in the energy of the random noise signal used to generate the tinnitus masking signal.

Indeed, both Gooch and Cox describe filter control signals that clearly do not have a constant energy across a frequency spectrum. Gooch describes a “clock circuit 54, e.g. Exar model 2209, [that] develops a center frequency signal corresponding to the desired center frequency.” Gooch, at Col. 5, ll. 14-16. Thus, not only does Gooch not describe a filter control signal as having a constant energy across a frequency spectrum, but Gooch in stark contrast clearly describes that the clock circuit develops a center frequency signal corresponding to the desired center frequency. Thus, not only does Gooch not describe a control signal having constant energy across a frequency spectrum, but Gooch describes a filter control signal with very clear energy centered about the desired filter center frequency.

Similarly, Cox fails to teach or suggest a pseudo random control signal, and fails to describe or even suggest that it is somehow desirable to have a filter control signal that has a constant energy across a frequency spectrum.

Neither Cox nor Gooch describes “a switch control module configured to generate at least one switch control signal comprising a pseudo random sequence to control the position of the at least one switch,” as claimed. Neither reference teaches or suggests a pseudo random control signal, and thus neither reference teaches or suggests a pseudo random filter control signal. Neither reference suggests the desirability of such a pseudo random control signal. Thus, the combination of Cox with Gooch fails to teach or suggest “a switch control module configured to generate at least one switch control signal comprising a pseudo random sequence to control the position of the at least one switch,” as claimed, and fails to teach or suggest the desirability of a modification to produce the claimed switch control module. Applicant respectfully requests reconsideration and allowance of claim 13.

**Claims 18, 25 and 26** include the features similar to those discussed above in relation to claim 13. Thus, claims 18, 25, and 26 are believed to be allowable at least for the reason that the cited references, whether alone or in combination, fail to teach or suggest a pseudo random control signal that controls the reconfigurable filter.

The Examiner makes reference to admitted prior art in the rejection to claim 18, but Applicant is unable to determine from the Office Action what the Examiner contends is admitted prior art, or what allegedly admitted prior art is used in making the rejection. Applicant

respectfully requests the Examiner clarify what portion is alleged as admitted prior art, and how that alleged admitted prior art contributes to the rejection of the claim.

**Claims 1, 20, and 21** discussed above in relation the rejections under 35 U.S.C. §102 also include features that recite a **pseudo random control signal**. Thus, claims 18, 25, and 26 are believed to be non-obvious over the references cited by the Examiner.

**Claims 3-4, 14-17, 19, and 22-23** depend from one of claims 1, 18, 21. Thus, claims 3-4, 14-17, 19, and 22-23 are believed to be allowable at least for the reason that they depend from an allowable base claim. Applicant respectfully requests reconsideration and allowance of all dependent claims, at least for the reason that they depend from an allowable base claim.

Each of the dependent claims may have individual bases for patentability beyond those discussed above in relation to the independent claims. It is not necessary to discuss the patentable distinctions of each dependent claim because of the allowability of the base claims from which they depend. Applicant reserves the right to address each of the additional cited references, should future correspondence from the PTO warrant such discussion. As an example, Applicant notes that Yassa describes a filter that operates to filter an output of a delta sigma modulator. Yassa fails to describe a delta sigma modulator as generating a pseudo random control signal for a reconfigurable filter. However, Applicant need not, at this time, fully develop the arguments relating to each dependent claim in light of the believed allowability of the independent claims from which they depend.

### CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 858-350-6100.

Respectfully submitted,



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